

METHOD FOR FACILITATING AND MAINTAINING AN ACTIVE PARTS DATA REPOSITORY

BACKGROUND

This invention relates generally to database management processes, and more particularly, the present invention relates to a method for determining active part numbers and maintaining a current data repository for active part numbers in a manufacturing environment.

The technology of e-commerce and the expanding global marketplace has placed new challenges on the electronics industry. With traditional geographic barriers relating to trade breaking down, manufacturers are now being faced with a barrage of business choices and purchasing options, ranging from selecting office suppliers to Internet service and applications providers. Many manufacturing enterprises are taking advantage of this global marketplace and measurably cutting costs by outsourcing their production processes to other manufacturers. By cutting costs, these businesses are able to become more competitive, selling finished products at lower prices.

Although e-commerce has offered many commercial advantages, its rapid and steady growth has created some difficulties for the manufacturing industry. For example, older proprietary and legacy computer systems were not equipped to transition well into the new age of Internet technology. These systems typically operated incompatible software and employed disparate hardware devices which were unable to communicate with one another. Costly upgrades and extensive customization were necessary before these older

systems could be leveraged into the new economy. To add to the frustration, global manufacturers with multiple geographically dispersed manufacturing sites and disparate manufacturing systems created islands of automation among them. These decentralized business units operated independently of one another, often employing incompatible business schemes requiring substantial integration measures before the global enterprise could effectively operate as a single entity.

The supply chain management processes of the manufacturing industry were not immune from the challenges created by this globalized market. Manufacturers continue to struggle to ensure that their design, development, and procurement groups are in sync with respect to the demand, availability, and financial aspects of their core parts and components requirements. A typical manufacturing enterprise may store hundreds of thousands of parts in its databases. Some of them are actively used by the enterprise, while others may include older legacy parts, parts that have become obsolete, out of production, or are otherwise no longer used by the enterprise. Needless to say, the bulk of this 'inactive' information is not particularly useful to the enterprise, however, would require a tremendous amount of human capital to filter out the unwanted data from the desired data. Further, many fields of information relating to these parts data are time dependent in that their usefulness or value to the enterprise may change over time. This information would need to be continuously reviewed and updated as well. If no action were taken by the enterprise, on the other hand, this data would continue to accumulate in

the system databases as new parts are entered and others become obsolete, resulting in clogged communications lines, slow searches, and almost certain retrieval of unwanted parts information. It is therefore desirable to identify active parts used by the enterprise so evaluation groups or councils for the enterprise can focus on the critical parts that require maintenance streamlining the database management processes related to parts data.

BRIEF SUMMARY

An exemplary embodiment of the invention relates to a method for implementing a preferred parts plan over a communications network via a parts database process tool. The method comprises extracting data relating to a part from a general parts database; evaluating demand activity and purchase activity relating to the part; verifying the date in which the part was entered into the database; evaluating conditions associated with the part and associating a status code to the part based upon the results the evaluations. The part data is then transferred to either an active database or an archive database depending upon these results.

BRIEF DESCRIPTION OF THE DRAWINGS

Referring now to the drawings wherein like elements are numbered alike in the several FIGURES:

FIG. 1 is a block diagram of an exemplary network system upon which the parts database management process is implemented; and

FIG. 2 is a flowchart illustrating how the parts

database management tool is implemented.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

In an exemplary embodiment, the parts database management tool is implemented via a computer network environment such as that shown in FIG. 1. System 100 includes enterprise 102 which comprises client systems 114 representing a council for enterprise 102. Client systems 114 are in communication with one another as well as with other entities of enterprise 102 via network 110. Network 110 may be any suitable communications link known in the art such as a local or wide area network or internetwork. Enterprise 102 also includes client system 106 which is also connected to network 110 and represents a user or employee of enterprise 102. Server 104 implements the parts database management tool of the present invention as well as web server and applications software for allowing authorized entities or client systems 106 and 114 of enterprise 102 to communicate via network 110. Server 104 is also executing database management software for presenting queries and providing information retrieval services to entities of enterprise 102. For purposes of illustration, server 104 is executing Lotus Domino (TM) and Lotus Notes (TM) as its communications and groupware tools and is also executing IBM's DB2 (TM) software for facilitating its database management processes. It should be noted that server 104 may share some or all of these applications with entities or client systems 106 and 114 of enterprise 102 in order to achieve the advantages of the present invention. Thus, although system 100 describes a "thin" client/server

architecture model, those skilled in the art will appreciate that client systems 106 and 114 may alternatively execute many of the applications services otherwise provided by server 104.

5 Data storage device 120 may reside within enterprise 102 and houses databases 122, 124, 126, 127, 128, and 130 which are utilized by enterprise 102 and the parts database management tool. Demand database 122 stores part numbers which are designated as demand part numbers by enterprise 102. Demand part numbers are part numbers of a machine or product projected to be sold by an enterprise. A product is made up of many parts for which associated part numbers comprise a bill of material for that product. When a marketing group of an enterprise forecasts how many products will be sold, the product is exploited to determine how many of the individual part numbers that make up the product will be needed. The same applies to actual orders placed for a product. Forecasted requirements are combined with actual requirements to create a demand statement. Demand statements show what part numbers may be used in the near future (assuming the forecast is accurate). For example, a product is made up of five part numbers for which an associated quantity is determined.

<u>Part Number</u>	<u>Quantity</u>
A	1
B	10
C	5
D	6
E	7

30 Suppose marketing forecasts sales of 1,000 products per month starting in January for a nine month period. Actual

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100																																																																		
Population	1,200,000	1,250,000	1,300,000	1,350,000	1,400,000	1,450,000	1,500,000	1,550,000	1,600,000	1,650,000	1,700,000	1,750,000	1,800,000	1,850,000	1,900,000	1,950,000	2,000,000	2,050,000	2,100,000	2,150,000	2,200,000	2,250,000	2,300,000	2,350,000	2,400,000	2,450,000	2,500,000	2,550,000	2,600,000	2,650,000	2,700,000	2,750,000	2,800,000	2,850,000	2,900,000	2,950,000	3,000,000	3,050,000	3,100,000	3,150,000	3,200,000	3,250,000	3,300,000	3,350,000	3,400,000	3,450,000	3,500,000	3,550,000	3,600,000	3,650,000	3,700,000	3,750,000	3,800,000	3,850,000	3,900,000	3,950,000	4,000,000	4,050,000	4,100,000	4,150,000	4,200,000	4,250,000	4,300,000	4,350,000	4,400,000	4,450,000	4,500,000	4,550,000	4,600,000	4,650,000	4,700,000	4,750,000	4,800,000	4,850,000	4,900,000	4,950,000	5,000,000	5,050,000	5,100,000	5,150,000	5,200,000	5,250,000	5,300,000	5,350,000	5,400,000	5,450,000	5,500,000	5,550,000	5,600,000	5,650,000	5,700,000	5,750,000	5,800,000	5,850,000	5,900,000	5,950,000	6,000,000	6,050,000	6,100,000	6,150,000	6,200,000	6,250,000	6,300,000	6,350,000	6,400,000	6,450,000	6,500,000	6,550,000	6,600,000	6,650,000	6,700,000	6,750,000	6,800,000	6,850,000	6,900,000	6,950,000	7,000,000	7,050,000	7,100,000	7,150,000	7,200,000	7,250,000	7,300,000	7,350,000	7,400,000	7,450,000	7,500,000	7,550,000	7,600,000	7,650,000	7,700,000	7,750,000	7,800,000	7,850,000	7,900,000	7,950,000	8,000,000	8,050,000	8,100,000	8,150,000	8,200,000	8,250,000	8,300,000	8,350,000	8,400,000	8,450,000	8,500,000	8,550,000	8,600,000	8,650,000	8,700,000	8,750,000	8,800,000	8,850,000	8,900,000	8,950,000	9,000,000	9,050,000	9,100,000	9,150,000	9,200,000	9,250,000	9,300,000	9,350,000	9,400,000	9,450,000	9,500,000	9,550,000	9,600,000	9,650,000	9,700,000	9,750,000	9,800,000	9,850,000	9,900,000	9,950,000	10,000,000

MTH	FORE CAST	ORDERS	TOTAL PRODUCT	A	B	C	D	E
JAN	1000	0	1000	1000	10000	5000	6000	7000
FEB	1000	0	1000	1000	10000	5000	6000	7000
MAR	1000	0	1000	1000	10000	5000	6000	7000
APR	1000	500	1500	1500	15000	7500	9000	10500
MAY	1000	500	1500	1500	15000	7500	9000	10500
JUN	1000	0	1000	1000	10000	5000	6000	7000
JUL	1000	0	1000	1000	10000	5000	6000	7000
AUG	1000	0	1000	1000	10000	5000	6000	7000
SEP	1000	0	1000	1000	10000	5000	6000	7000
TOTAL DEMAND				10000	10000 0	5000 0	60000	70000

Invoice database 124 stores data pertaining to
 purchased parts. Create database 128 stores the date that a
 part number was added into the general parts database 127.
 General parts database 127 houses all part numbers and
 related data used or required by enterprise 102. Active
 database 126 stores only those part numbers and associated
 data related to active parts as determined by council 112
 and the parts database management tool. Archive database

130 stores part numbers and related data associated with inactive parts that were filtered out through the execution of the parts database management tool via general parts database 127. These databases may alternatively be embodied in the form of a single database or may even be physically located externally to system 100 and retrievable by suitable networking solutions known in the art such as an Intranet or Extranet network as well as the Internet and wireless technologies.

The parts database management tool performs periodic extractions on data in general database 127, retrieves relevant associated data from demand database 122, invoice database 124, and create database 128, performs calculations on the cumulative data, filters out inactive parts for storage in archive database 130, and stores the resulting active parts data in active database 126 for subsequent review by council 112. Updating general parts database 127 in this manner enhances the parts data retrieval process, since the database is not overly burdened with inactive parts data. Users such as client system 106 and client systems of council 112 can access information in active database 126 more quickly and with substantial certainty that the information is current.

It should be noted that although the system databases described above for storing the active and inactive part numbers associated with the parts database management tool are represented as separate databases, these part numbers may alternatively reside on a single database with corresponding flags assigned for determining their status in order to achieve the advantages of the present invention. In this manner, a software front-end tool may be utilized as a filter to screen out inactive part numbers. Such filters are generally known and will be appreciated by those skilled in the art.

The process of implementing the parts database management tool is further described in FIG. 2. Server 104 initiates a part analysis via the parts database management tool at step 202 whereby parts data related to one or more parts records is extracted from general parts database 127. Parts data may include information such as part number, part name, part description, as well as other desired information. The tool pulls related demand data from demand database 122 and assesses the demand status at step 204. If no demand is indicated, flow proceeds to step 210. If there is indicated a demand, the process continues to step 206 where the parts database management tool further examines

the time status of the demand. If the demand activity is greater than one year, flow proceeds to step 210. If the demand activity is recent (i.e., less than or equal to one year), the quantity of the demand is then evaluated at step 208. If the quantity is less than or equal to 'n', 'n' being a variable number set by enterprise 102, then the parts database management tool proceeds to step 210. Thus, in steps 204 - 208 the parts database management tool assesses the demand activity related to the part whereby specified conditions that are met cause the tool designate the part to be 'inactive' unless further processing relating to purchase activity and/or other designated conditions dictate otherwise as will be described further herein. At step 210, the parts database management tool examines the purchase history of the part number(s) being examined and determines whether it has been purchased by the enterprise. This information may be found in the invoice database 124 in which invoice records of enterprise 102 indicate that it has paid for a purchase of that part. If no purchase activity has been found, the process continues at step 216. If purchase activity has occurred, the parts database management tool examines the time frame of the purchase activity at step 212. If the activity is greater than one

year old, flow proceeds to step 216. If not, then the parts database management tool evaluates whether any refunds were given by enterprise 102 that would diminish the value of the purchase activity at step 214. If substantial refund

5 activity occurred (threshold activity levels may be flexibly set by enterprise 102), flow proceeds to step 216, otherwise the process continues at step 230. At step 216, the parts database management tool examines the date in which the part was entered into general parts database 127. If the date
10 entered is greater than one year, the parts database management tool sets a status flag at step 217, otherwise the parts database management tool examines the data to see if the part has become obsolete at step 218. If obsolete, the flag is set at step 220. If not, the parts database
15 management tool checks to see if the part is end of life at step 222 and whether it has been designated 'field use only' at step 226. The term, 'field use' is used here to describe situations in which a product requires continued maintenance despite the fact that it may have gone end of life or out of
20 production (e.g., product upgrade, warranty service obligations, etc.). If field maintenance is required, a service group for the enterprise may forecast field requirements or 'field use'. If any of these conditions are

positive, an 'inactive' status flag is set by the tool at steps 217, 220, 224, and 228 respectively, otherwise, process continues at step 230 whereby a preferred parts code associated with the part data is examined by the tool.

5 Additionally, if responses at steps 208 or 214 are negative, the process flow continues at step 230. Enterprise 102 may designate automatic inactive codes to parts which are required to be avoided. If the parts database management tool notes a positive response to the preferred part code
10 query, then flow proceeds to step 232 where a status flag is set to inactive. If a negative response is received, flow proceeds to step 233 whereby the parts database management tool checks to see if a part number is owned by or reserved to certain divisions or groups of enterprise 102. The term,
15 'owned by' refers to certain groups within a manufacturing environment of enterprise 102 which put part numbers into a database for which no management of those part numbers are required. For example, a 'documents' group may have a part
20 number for a type of paper used which is used internally for that group. The parts database management tool ensures that these part numbers are ignored during the process based upon ownership determinations. If no ownership or reservation issues arise, the parts database management tool sets the

status flag to active at step 234, whereby the part number is transferred to active parts database 126 for storage at step 236. Subsequently, council 112 reviews these critical parts at step 238 and performs periodic evaluations and maintenance on this data at step 240.

The implementation of the parts database management tool enables an enterprise to significantly reduce the number of parts it needs to maintain by automating the critical parts evaluation processes and storing the filtered 'active' parts data in a centralized database for review and subsequent maintenance.

As described above, the present invention can be embodied in the form of computer-implemented processes and apparatuses for practicing those processes. The present invention can also be embodied in the form of computer program code containing instructions embodied in tangible media, such as floppy diskettes, CD-ROMs, hard drives, or any other computer-readable storage medium, wherein, when the computer program code is loaded into and executed by a computer, the computer becomes an apparatus for practicing the invention. The present invention can also be embodied in the form of computer program code, for example, whether stored in a storage medium, loaded into and/or executed by a

computer, or transmitted over some transmission medium, such as over electrical wiring or cabling, through fiber optics, or via electromagnetic radiation, wherein, when the computer program code is loaded into and executed by a computer, the computer becomes an apparatus for practicing the invention. When implemented on a general-purpose microprocessor, the computer program code segments configure the microprocessor to create specific logic circuits.

While preferred embodiments have been shown and described, various modifications and substitutions may be made thereto without departing from the spirit and scope of the invention. Accordingly, it is to be understood that the present invention has been described by way of illustration and not limitation.